Commission to establish economically rational interconnection rates which will help establish a competitively neutral regulatory regime in local exchange services. The merger will create a giant global telecommunications company: a combined BT-MCI entity will have $42 billion in annual revenues and access to local and long distance networks in both the U.S. and the U.K., as well as the benefit of BT's strong standing in international telecommunications services. BT-MCI will be able to offer multinational companies a complete package of services, from local to long distance to international well before U S WEST is even allowed to provide in-region long distance services. According to *the Wall Street Journal*:

> Make no mistake: The behemoths such as BT-MCI will move into new markets sucking up lucrative corporate and suburban traffic from local phone companies. An unfortunate rival, such as a local Bell, could be left with the unprofitable scraps – unless it can tie up with a heavyweight of its own.[17]

The combined BT-MCI will have extensive financial resources, with a substantially expanded array of competitive options.

Q. IS MCI LIKELY TO INCREASE ITS INVESTMENT IN NETWORK FACILITIES IN COLORADO DUE TO THE MERGER?

A. No. MCI CEO Bert Roberts, has indicated that MCI does not plan to significantly increase its domestic capital investment in local network construction in the next year beyond those already constructed or in the planning stages. Instead, Mr. Roberts has indicated that the "real acceleration" in local competition will be in marketing.[18]

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[17] John Keller, "BT-MCI Merger Reshapes Telecom Industry," *Wall Street Journal*, November 5, 1996, p. B1.

[18] *Washington Telecom Newswire (WTN)* 979-96, "MCI-BT Merger May Not Mean Big Boost in Network Construction", November 3, 1996.

According to a recent article in the *Washington Post*:

> Though Concert's global plans are ambitious, they won't necessarily include increased construction of local telephone facilities in the United States or elsewhere. *Building fiber-optic links or copper networks to lower-volume residential customers is simply not in BT's game plan [emphasis added]* (MCI plans to have the higher-capacity fiber-optic lines installed in 25 cities by February). Instead, BT executives say they'll be happy just to purchase bulk capacity from local telephone carriers and resell it to consumers. In fact, that's one of the things that BT can help MCI to do better, according to Mockett.
>
> 'There is a lot that we can bring to the table in terms of helping accelerate MCI into the local loop,' he said, such as 'how to leverage other people's infrastructure that has been resold [and] how to look at the approach of business versus residential.'
>
> Mockett added that BT's long-term plans don't include penetrating much below the 'top 30 percent' of residential customers at all. MCI Chairman Bert C. Roberts Jr., in announcing the merger last Sunday, also downplayed the prospects for increased investment in local telephone networks. BT's money will be used "in the sense of adding sales [capabilities] more than adding capital" for facilities, he said.[19]

Q. IS THE U.K. TELECOMMUNICATIONS MARKET COMPETITIVE?

A. Yes, in my view, the U.K. is the most competitive market in Europe.[20] Bert Roberts takes it one step further and states that the U.K. market "is the most competitive

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[19] Mike Mills, "London on the Line," *Washington Post*, November 10, 1996, p. H01.

[20] The FCC apparently agrees. "[I]t is noteworthy that the U.K. telecommunications market is one of the most liberalized markets in the world, and certainly the most liberalized market in the European Union. In fact, the United Kingdom has few regulatory barriers to entry and has no foreign ownership limitations on U.K. carriers. Basically, the United Kingdom permits competition in all services, with the notable exception of international facilities-based services." Request of MCI Communications Corporation, British Telecommunications, plc, Joint Petition of Declaratory Ruling Concerning Section 310(b)(4) and (d) of the Communications Act of 1934, as amended, Federal Communications Commission, Declaratory Ruling and Order, FCC 94-188, Paragraph 28.

telecommunications market in the world."[21] According to MCI and BT in their application for merger approval recently filed before the FCC "[N]o telecommunications market and regulatory regime in the world is more liberalized than the U.K."[22]

The most powerful competitor in this market, the former state-owned monopoly BT, is a vertically integrated local and long distance service provider, maintaining network facilities in more than 30 countries.[23] Competing carriers access U.K. consumers in a variety of ways: (1) cable companies and other utilities are allowed to directly connect with U.K. end user consumers for the provision of telephony services, as well as to resell spare capacity on their existing lines; (2) independent service providers may resell BT services; and (3) competing network operators (such as long-distance providers) connect with the BT network, allowing consumers indirect access to their networks by dialing additional digits or following other procedures. The net result is a telecommunications market in which substantial investment is occurring in construction of network facilities. As of July 1996, over 13% of business customers use indirect access, routing calls over a competing network.[24] Additionally, the U.K. Office of Telecommunications predicts that alternative network providers, such as the cable companies, will pass by 75% of U.K. homes within the next five years.[25]

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[21] Mike Mills, "MCI Adds Strength to Merger; D.C. Firm Teams Up With British Telecom To Form Concert PLC", *The Washington Post,* November 4, 1996, p. A1. See also *WTN* 979-96, "MCI-BT Merger May Not Mean Big Boost in Network Construction," November 3, 1996.

[22] British Telecommunications Plc. And MCI Communications, "In the Matter of the Merger of MCI Communications and British Telecommunications plc, Applications and Notificaiton: Volume One," Before the FCC, December 2, 1996, p. 14.

[23] "BT-MCI Merger Reshapes Telecom Industry," *The Wall Street Journal*, November 5, 1996, B6.

[24] "Office of Telecommunications' (OFTEL) Policy on Indirect Access, Equal Access and Direct Connection to the Access Network: Statement from the Director General of Telecommunications," July 1996, paragraph 12.

[25] *Ibid.*, paragraph 13.

Q. HOW DO UNBUNDLING REQUIREMENTS DIFFER BETWEEN THE U.K. AND THE UNITED STATES?

A MCI and other new entrants have successfully argued before Congress and the FCC that unbundling network elements is essential to foster competition in local exchange markets in the U.S.[26] However, apart from interconnection (for call termination and origination) through the sale of leased trunks, BT offers no unbundling, and does not allow competitors to lease local exchange lines (local loops) or parts thereof..[27] Competitive network providers must build their own networks and pay connection fees at the point of interconnection with BT. In a July 1996 policy report, the Office of Telecommunications explained that forcing BT to unbundle its network and lease local loops to competitors would undermine facilities-based competition, reducing dynamic efficiency gains in network technology:

> Although OFTEL recognizes that direct connection to the Access network is feasible, it would run counter to the U.K. policy of encouraging alternative infrastructure. It would involve the leasing of part of BT's network at a regulated price to its competitors and hence would discourage rather than encourage operators to build their own Access Networks. It would undermine the value of the investment other operators, particularly cable companies, have made in building their own infrastructure to gain customers and hinder the development and upgrading of existing Access Networks.[28]

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[26] For example, Dr. Kelley argues in his Colorado arbitration testimony that U S WEST should unbundle even more network elements than those required by the FCC, stating that failure to require sub-loop unbundling would "undermine the entrant's meaningful opportunity to compete using an architecture that rivals the incumbent's." Direct Testimony of A. Daniel Kelley on Behalf of MCI Telecommunications before the Colorado Public Utilities Commission, Docket No. 96A-366T, p. 9.

[27] "OFTEL Policy on Indirect Access, Equal Access and Direct Connection to the Access Network," July 1996. See also OFTEL's February 1996 report entitled *Promoting Competition in Services over Telecommunications Markets*, Chapters 3-4, especially 4.8.

[28] "OFTEL Policy on Indirect Access, Equal Access and Direct Connection to the Access Network," July 1996, paragraph 45.

Q. HOW DO RESALE REQUIREMENTS DIFFER BETWEEN THE U.K. AND THE UNITED STATES?

A. In the U.K., no administratively determined avoided cost wholesale discount exists for resellers of BT's wireline local exchange service. Resellers pay the same retail rate that end user customers pay. According to OFTEL:

> [T]he consequence of independent service providers not getting Condition 13 charges [interconnection charges] for end-to-end network services is that they will continue to be charged retail prices for basic retail services (including end-to-end network services). This means they may find it harder to compete with BT in the provision of basic retail services although they would be paying the same as BT's Supplemental Services Business for basic retail services as an input to enhanced services.[29]

Q. ARE INTERCONNECTION AND CALL TERMINATION PRICES IN THE U.K. BASED ON INCREMENTAL COSTS?

A. No. As BT explains in their 1995 Annual Report, these prices are set based on fully allocated embedded costs:

> In 1991, the interconnection condition in the [BT] License was amended to require interconnect call charges determined by the Director General to cover fully allocated costs of conveyance, including a full contribution to relevant overheads; a return on capital employed, judged by the Director General as reasonable for the systems business; and, until BT ceases to be subject to restrictions on rebalancing, a specific contribution in certain circumstances by other operators ("access deficit contribution" or ADCs) towards the losses incurred by BT in providing exchange lines. "Reblancing" means increasing exchange line rentals while decreasing call prices, to reflect better the costs of providing these services."[30]

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[29] "OFTEL, Promoting Competition in Services Over Telecommunications Networks, Chapter 4: Issues On Which OFTEL is Not Proposing Major Change.", p. 4. In the UK, local telephone resellers are known as independent service providers which are differentiated from network operators, who run their own networks.

[30] 1995 BT Annual Report, p. 13.

Q. IS BT CURRENTLY ALLOWED TO REBLANCE ITS RATES?

A. BT has been given substantially increased flexibility to rebalance its rates. Largely in response to increasing competition, many of its services have been removed from price cap regulation.[31]

Q. ARE YOU SAYING THE REGULATORY REGIME IN THE U.K. SHOULD BE ADOPTED IN THE UNITED STATES?

A. No, although I do agree with many of the policies adopted in the United Kingdom. The reason I used the U.K. example was to highlight the fact that the U.K. telecommunications market is considered by many parties, including MCI and the FCC to be one of the most open and competitive in the world, despite the fact that there are virtually no unbundling requirements, no administratively determined wholesale prices and interconnection charges are based on fully allocated costs. Given that a telecommunications market can be competitive without the highly intrusive unbundling and resale policies being pursued in the United States, it is critically important not to distort competition in the United States by setting uneconomically low (below cost) prices for wholesale services and unbundled network elements. As the regulators in the U.K. recognize, this would inhibit facilities-based competition, and financially devastate the incumbent local exchange providers.

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[31] According to OFTEL, "The Director General, with BT's agreement, has recently ended the cap on exchange line rental price increases, reflecting the increasingly competitive marketplace, and at the same time removed the ADC regime. However, there remain some instances where tariffs are significantly unbalanced Customers on the BT Light User Scheme, in which the rental element is subsidized, are not permitted to use indirect access arrangements. In addition, BT has recently asked OFTEL to give its view on the acceptability of levying an additional fixed charge for use of indirect access on customers on other tariff packages with rental below the level of the tariff used to monitor BT's compliance with its price control obligation. "OFTEL Policy on Indirect Access, Equal Access and Direct Connection to the Access Network," July 1996, p. 3.

V. RESTRICTIONS ON THE USE OF UNBUNDLED NETWORK ELEMENTS

Q. IS THE FCC'S DECISION TO REQUIRE THAT THE "END OFFICE SWITCHING" ELEMENT INCLUDE ALL VERTICAL FEATURES COMPATIBLE WITH U S WEST'S UNIVERSAL SERVICE OBLIGATION?

A. No, it is not. Vertical features are an important source of subsidies to support below-cost pricing of basic residential services of U S WEST. By "bundling" these features into the switching element, competitors can provide vertical services for their customers at no incremental cost. The FCC Order creates an enormous incentive to arbitrage the existing retail prices of vertical features, depriving U S WEST of a substantial contribution toward its universal service obligation. For example, CLASS and customer calling features such as caller ID and automatic call back are priced substantially above cost and help subsidize certain residential users whose service is priced below costs. To comply with the FCC Order, however, the U S WEST TELRIC cost estimates for the local switching element include the cost of these features.

Q. DOES THE FCC ORDER ALLOW FOR ANY RESTRICTIONS ON THE USE OR COMBINATION OF UNBUNDLED NETWORK ELEMENTS?

A. No, it does not, even though that is clearly contrary to the fundamental economic rationale for unbundling. Without such restrictions, there is nothing to prevent new entrants from purchasing <u>all</u> of the network elements needed to provide local exchange service on a bundled basis, i.e., as the local exchange service itself. In other words, the FCC Order allows "sham unbundling."

Q. WHAT IS "SHAM UNBUNDLING"?

A. The rationale for unbundling is that some entrants do not want to buy all of a service (e.g., local exchange service); they only want to buy parts of it, combining those parts with their own facilities (or with parts purchased from other facilities-based carriers) to provide the end service.[32] According to antitrust law and practice, only essential facilities, (bottleneck facilities controlled by a monopoly provider), should be unbundled. Non-essential facilities are supplied most efficiently in competitive markets and do not require the force of government intervention to be made available on an "unbundled" basis.

Hence, correctly implemented unbundling can accelerate entry and encourage investment in new facilities. In contrast, sham unbundling is the opposite of unbundling, and contrary to the economic rationale for unbundling, because it entails buying an integrated package of elements in order to resell the service, **not** to combine essential unbundled elements purchased from one supplier with other elements that are self-supplied or purchased from other suppliers. Sham unbundling is nothing more – and nothing less – than pure price arbitrage, by which new entrants such as AT&T could circumvent the avoided cost standard for the resale of bundled services.

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[32] For example, according to a report submitted by AT&T in the request for arbitration with Bell Atlantic, "A straightforward policy approach to prevent monopoly leveraging through tying is to prohibit the regulated firm from making sales of one service or network element (the tying) conditional on the purchase of another service or network element (the tied good) in situations in which the former good is subject to significant monopoly power. In addition, where such monopoly power is present, the regulated firm should be required to unbundle the package of services and network components it provides, making each available to customers at its own individual price. By proscribing both conditional sales and bundling, such a rule effectively removes tying as a potential monopoly leveraging strategy. The unbundled service and network elements that the local exchange is required to supply and price separately under this rule should correspond closely to the set of "basic network functions" of the local exchange network. In this way, either final product consumers (e.g., local residential or business customers) or downstream competitors (e.g., alternative local exchange companies) will be able to secure the services and elements they seek and need unencumbered by requirements to purchase services and network elements they do not want or need." (David Kaserman et al, "Local Competition Issues and the Telecommunications Act of 1996," July 15, 1996, filed as an attachment to AT&T's petition for arbitration against Bell Atlantic on July 15, 1996.)

Q. PLEASE EXPLAIN HOW NEW ENTRANTS CAN USE SHAM UNBUNDLING TO ARBITRAGE U S WEST'S PRICES.

A. Sham unbundling encourages and exacerbates arbitrage because the pricing standards the FCC has adopted for resale (the net avoided cost standard) and unbundled network elements (TELRIC plus a share of joint and common costs) are conceptually different and unlikely to lead to consistent prices. Because the price of buying a service for resale through the unbundled network element route is likely to be lower than the retail price less avoided cost (wholesale price), particularly for business service, new entrants have no incentive to use the avoided cost wholesale price provided for in the Act. Basically, new entrants could arbitrage the price difference between the avoided cost wholesale price for local exchange service and the price of rebundling all the elements which make up local exchange service. In some states, the retail prices of business local exchange service, minus the wholesale discount, will exceed the sum of the prices of the unbundled network elements, which are based on TELRIC plus a share of joint and common costs. In other words, even though new entrants are buying business exchange service for resale, they pay for unbundled network elements, which are priced well below the wholesale price of bundled service. In economic parlance, the FCC Order promotes "rate arbitrage," by which new entrants can exploit artificial pricing rules to game U S WEST, pay artificially low prices for U S WEST's services, and gain an enormous competitive advantage because U S WEST cannot reciprocate. Thus, under the FCC Order, entrants can buy U S WEST services in two ways: through the wholesale discount or by sham unbundling. If the retail price is low, especially if it is below cost, such as residential exchange service, the entrant can purchase the service on a resale basis below cost. Alternatively, if the retail price is above cost, then the entrant can arbitrage the price differential by buying on a "bundled" basis at unbundled prices.

Clearly, if prices for unbundled network elements were set an uneconomically low levels, such as those put forward by the supporters of the Hatfield Model or the interim interconnection tariff rates, the problem of sham unbundling would be exacerbated. The testimony of U S WEST witness Frank Hatzenbuehler provides a per business line quantification of the loss of revenue which could occur due to regulatory rate arbitrage if the interim tariff rates were made permanent or if the U S WEST TELRIC based prices were adopted. If sham unbundling is allowed under either scenario, the results for U S WEST would be financially devastating.

Q. ARE THERE OTHER REASONS WHY NEW ENTRANTS WOULD USE SHAM UNBUNDLING INSTEAD OF PURCHASING RESALE SERVICES UNDER THE AVOIDED COST WHOLESALE PRICES OFFERED BY U S WEST?

A. Yes. Sham unbundling may also allow the IXCs to evade the provisions of the Act regarding the joint marketing of interLATA services. One of the fundamental goals of the Act is to increase competition in telecommunications markets by allowing IXCs into LECs' markets and vice versa. In an attempt to balance the interests of both IXCs and LECs, the Act does not allow IXCs to jointly market resold local services with interLATA services until LECs are allowed themselves to provide interLATA services. By permitting sham unbundling,[33] the FCC Order effectively allows IXCs to evade the statutory prohibition of joint marketing, because IXCs can jointly market "unbundled" local services with interLATA services prior to LEC entry into the interLATA markets.

[33] See FCC Order, paragraph 335 and 336.

Similarly, under the Act, RBOCs are not required to implement intraLATA toll dialing parity until they have received permission to sell interLATA services.

> A Bell operating company granted authority to provide interLATA services under subsection (d) shall provide intraLATA toll dialing parity throughout that State coincident with its exercise of that authority... Except for single-LATA States and States that have issued an order by December 19, 1995, requiring a Bell operating company to implement intraLATA toll dialing parity, a State may not require a Bell operating company to implement intraLATA toll dialing parity in that State before a Bell operating company has been granted authority under this section to provide interLATA services originating in that State or before 3 years after the date of enactment of the Telecommunications Act of 1996, whichever is earlier.[34]

However, by permitting sham unbundling, the FCC Order encourages IXCs to purchase the unbundled switching element, and then program the switching function to automatically route all intraLATA toll calls to the IXC's facilities, effectively implementing intraLATA toll dialing parity prior to the LEC's entry into the interLATA market, evading the provision of the Act that would delay dialing parity until U S WEST is authorized to begin offering interLATA services.

Q. DID CONGRESS INTEND TO ALLOW SHAM UNBUNDLING WHEN THE TELECOM ACT OF 1996 WAS WRITTEN?

A. No, since "sham unbundling" allows for regulatory arbitrage of incumbent LEC's retail and wholesale prices. Sham unbundling, which is permitted by the FCC Order, is contrary to the Congressional intent underlying the Telecommunications Act of 1996. In the Amici Curiae Brief I mentioned above supporting the appeal of the FCC Order, members of the House Commerce Committee explain that new entrants who wanted to

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[34] Telecommunication Act of 1996, Section (e)(2).

resell an incumbent's services were supposed to use the avoided cost discount off retail services and not rebundle all the elements necessary to provide end to end service:

> The FCC, however, has allowed competitors who have no local facilities of their own, and thus were expected to be governed by the House's wholesale pricing formula, to obtain all the network elements that go into an incumbent's service under the Senate's "cost plus profit" formula.
>
> The Commission's rules have the perverse effect of allowing a competitor to choose the more favorable cost-based pricing method, effectively gutting the statutory distinction and guaranteeing that non-facilities-based carriers can make money by undercutting the incumbent's price for any offering that the incumbent must – under state regulatory policies – price above cost. As long as they can accumulate risk-free profits with minimal investment, competitors will not build their own networks to provide competing services.
>
> The Commission's establishment of unbundling rules that act as a substitute, rather than an alternative, for purchasing retail services at wholesale rates slants competition in another way as well.
>
> Congress was aware that it would be unfair and anticompetitive to allow the major long distance carriers to market resold local service with their own long distance service where the local telephone company (which provides the local service) cannot sell long distance. Section 271(e)(1) thus provides, in substance, that if AT&T, MCI, and Sprint want to sell packages of local and long distance services before the local exchange carrier can do the same, they must build a local network of some sort. Under the FCC's approach, however, a company like AT&T can obtain all the unbundled network elements it needs to sell local service with its long distance service, without having a single foot of local telephone wire of its own.[35]

Q. WOULD YOU SUMMARIZE YOUR POSITION ON SHAM UNBUNDLING?

A. Sham unbundling allows new entrants to arbitrage the resale of local exchange service and violates the objectives of the Act by encouraging new entrants to immediately joint

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[35] Dingell, John D., M.C., W. J. Tauzin, M.C., Rick Boucher, M.C., and Dennis Hastert, M.C., "Brief of Amici Curiae before the United States Court of Appeals for the Eighth Circuit, No. 96-3321." pg. 5.

market local and long-distance service, imposing a severe competitive disadvantage and substantial financial losses on U S WEST. Hence, this Commission should exercise its authority to prohibit sham unbundling until the FCC rules are amended.

VI. ESTIMATING THE COST OF UNBUNDLED NETWORK ELEMENTS

A. *TELRIC COSTING METHODS ARE CONSISTENT WITH ECONOMIC COSTING PRINCIPLES*[36]

Q. COULD YOU EXPLAIN HOW TELRIC IS DIFFERENT FROM TSLRIC?

A. TELRIC and TSLRIC have in common that they are both, generically, average incremental cost measures (and so the FCC refers to TELRIC as a "version" of TSLRIC). However, TELRIC and TSLRIC differ in two broad and significant respects. First, TELRIC divides the LEC network differently than does the TSLRIC methodology. While TSLRIC measures the incremental costs of services, TELRIC measures the incremental cost of network elements. The distinction is not merely semantic. Consider an auto manufacturer that produces two products, cars and trucks. A TSLRIC methodology would treat cars and trucks as separate "services" or products (generally, outputs of the firm), and estimate an incremental cost for each. The piece of equipment that spray-paints the base coat of paint on the vehicles would be a joint or shared cost of the two products, excluded from the TSLRIC of both. In a TELRIC methodology, that spray painting machine itself would be an element, the cost of which would be reflected in its TELRIC. Hence, rather than the cost of that machine appearing in shared costs, it

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[36] As I understand it, the FCC Order has been stayed based on an analysis of relevant statutory authority given to the FCC and the level of the FCC's proxy prices and not upon any determination that the economic logic in the TELRIC principles in the Order is incorrect.

would appear in TELRIC. Similarly, many inputs that are shared across services are themselves "elements," and their costs therefore would appear in TELRIC, but not in TSLRIC. Thus, the magnitude of joint and common costs would be smaller under the TELRIC methodology. Thus, under the new methodology, TELRICs will capture more of the total costs than did the TSLRICs, and the remaining costs properly considered joint and common will be fewer. By attributing these indirect expenses to TELRIC, there is less room for uneconomic allocation of common costs.

Q. DOES THE FCC ORDER SUPPORT YOUR POSITION THAT PRICES FOR UNBUNDLED NETWORK ELEMENTS SHOULD INCLUDE FORWARD-LOOKING JOINT AND COMMON COSTS?

A. Yes, quite clearly and explicitly. The Order states: "We conclude here that prices for interconnection and unbundled elements...should...include a reasonable allocation of forward-looking joint and common costs."[37] (Although the FCC Order is stayed, this is nonetheless the economically correct position and should be adopted by this Commission. Thus where the FCC, in its Order, uses economically correct analysis, references to the FCC Order are retained in the body of this testimony.)

Q. ARE THE TELRIC COSTING PRINCIPLES SPELLED OUT IN THE FCC ORDER ECONOMICALLY APPROPRIATE?

A. Yes. As I interpret them, the costing principles enumerated in the FCC Order and presented below provide the basis for calculating TELRIC in an economically sound manner. I would, however, like to point out that the TELRIC principles enunciated by the FCC Order do not encompass all of the necessary requirements for producing an

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[37] FCC Order, paragraph 672.

economically sound cost study. For example, as I detail later in my testimony, it is necessary to use realistic, not idealized, assumptions about the conditions under which network construction would occur. In various state arbitration proceedings, new entrants have attempted to implement "TELRIC" without including this basic principle of economic costing. Additionally, TELRIC studies should include, to the extent possible, the costs of unbundling (such as separating individual loops from a pair gain feeder cable) a local exchange network. The following are the most important principles specified in the Order:[38]

1. forward looking, best available technology based on existing network architecture;

2. actual or realistic, not optimal or idealistic, utilization rates and fill factors;

3. economic depreciation lives;

4. forward looking, risk-adjusted cost of capital;

5. inclusion of all attributable costs that are incremental in TELRIC.

Q. PLEASE EXPLAIN THE RATIONALE FOR "BEST AVAILABLE TECHNOLOGY" BASED ON <u>EXISTING</u> NETWORK ARCHITECTURE IN TELRIC?

A. Certainly. This guideline contains the basic economic concepts underlying the TELRIC concept. It implies that elements should be priced based on all of the costs which are incremental to providing a service/element using the best available technology and the most efficient mix of resources (land, labor, capital) holding the location of existing

[38] The methodology continues to be economically sound and should therefore be adopted by state arbitrators regardless of the stay.

switches constant. These costs would include all the costs necessary to construct the network or elements of the network from scratch.[39] According to the FCC Order:

> *Total element long-run incremental cost.* The total element long-run incremental cost of an element is the forward-looking cost over the long run of the total quantity of the facilities and functions that are directly attributable to, or reasonably identifiable as incremental to, such element, calculated taking as a given the incumbent LEC's provision of other elements.[40]
>
> *Efficient network configuration.* The total element long-run incremental cost of an element should be measured based on the use of the most efficient telecommunications technology currently available and the lowest cost network configuration, given the existing location of the incumbent LEC's wire centers.[41]

In contrast, the "scorched earth" approach treats the market landscape as a clean slate, upon which wire centers, switches, and other plant can be located in a theoretically ideal way given the current distribution of customers and demand. Scorched earth costing methods are not economically appropriate or realistic (even in long run cost estimates where all costs are typically considered variable) when you have a network which requires substantial sunk costs to be incurred in order to provide service. The FCC states, by not employing the "scorched earth" approach, we "encourage facilities-based competition to the extent that new entrants, by designing more efficient network

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[39] According to the Order, "...the reconstructed network will employ the most efficient technology for reasonably foreseeable capacity requirements," Paragraph 685, and "Stand-alone costs are defined as the forward-looking cost that an efficient provider would incur in providing a given element or combination of elements. No price higher than stand-alone cost could be sustained in a market from which entry barriers were absent. Where there are few common costs, there is likely to be only a minimal difference between the forward-looking costs that are directly attributable to the particular element, which excluded these costs, and stand-alone costs, which includes all of them," Paragraph 698.

[40] FCC Order, Appendix B, § 51.505.

[41] FCC Order, Appendix B, § 51.505.

configurations, are able to provide the service at a lower cost than the incumbent LEC."[42] The alternative "may discourage facilities-based competition by new entrants because new entrants can use the incumbent LEC's existing network based on the cost of a hypothetical least-cost, most efficient network."[43]

It is noteworthy that, as a participant in state arbitration proceedings, I have observed that entrants have tried to misuse this principle to come up with uneconomically low cost estimates for network construction. For example, some entrants claim erroneously that using forward looking technology implies that a network of the future would have conditioned loops, so therefore the TELRIC for an unbundled loop should not include costs for conditioning.

Q. PLEASE EXPLAIN THE RATIONALE FOR USING REALISTIC "FILL FACTORS" IN TELRIC.

A. TELRIC models should use realistic assumptions about capacity utilization rates and fill factors. This type of realism is particularly important given that incumbent LECs are required to maintain stand-by capacity in order to fulfill state quality-of-service and ready-to-serve obligations and thus have lower capacity utilization than they would choose based purely on business considerations. As the FCC concludes:

> under a TELRIC methodology... Per-unit costs shall be derived from total costs using reasonably accurate "fill factors" (estimates of the proportion of a facility that will be "filled" with network usage); that is, the per-unit costs associated with a particular element must be derived by dividing the total cost associated with the element by a reasonable projection of the actual total usage of the element. Directly attributable forward-looking

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[42] FCC Order, paragraph 685.

[43] FCC Order, paragraph 683.

> costs include the incremental costs of facilities and operations that are dedicated to the element. Such costs typically include the investment costs and expenses related to primary plant used to provide that element.[44]

Q. PLEASE EXPLAIN THE RATIONALE FOR ECONOMIC DEPRECIATION IN TELRIC.

A. Economic depreciation lives should be used in conducting TELRIC studies. This ensures that incumbent LECs have a reasonable opportunity to recover the full economic costs they incur when providing unbundled network elements. According to the Order:

> The depreciation rates used in calculating forward-looking economic costs of elements shall be economic depreciation rates.[45]

With competition emerging and state regulators no longer offering a "monopoly franchise," the shareholders are at risk when depreciation rates are understated as has historically been the case. In the past, regulators consistently required that U S WEST use longer asset lives than it would have chosen for itself, resulting in accumulated "uneconomic" costs and stranded investment. In a historically regulated environment the negative impacts of prescribed lives were minimized because: (1) consumers were protected from rate increases that could otherwise have been caused by early retirement of telephone plant; (2) competition was not harmed significantly, because competition was not a significant factor; and (3) shareholders were protected by regulatory accounting principles, which allowed U S WEST to set prices to recover the cost of capital investments, even after telephone plant was retired.

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[44] FCC Order, paragraph 682.

[45] FCC Order, Appendix B, § 51.505.

In the current environment, the principles of causality and realism call for the use of economic depreciation lives in estimating TELRICs. Economic lives produce depreciation factors that represent the expected functional lives of telephone plant, and, therefore, constitute the best available projection of the annual expense that will be engendered by U S WEST's investments. It is necessary for cost estimates to portray all expenses as accurately as possible in the transition from regulation to competition. Hence, economic rather than prescribed lives are the correct lives to use in U S WEST's cost studies.

Considerations of entry costs and entry effects point to the necessity of updating the economic lives on a regular basis. With the development of disparate technologies for providing local exchange services, it is highly likely that economic lives will shorten. The upgrade of cable TV plants to better offer interactive telecommunications services, and the increasing competition between wireless and wireline exchange service, for example, will drastically reduce both the utilization rates and the economic lives of U S WEST's local loops. U S WEST must also consider the increasing likelihood of stranded plant as competitors gain market share, especially if competitors are able to win discrete geographic areas, thereby displacing U S WEST as the facilities-based provider in those areas. Again, economic lives incorporate the impacts of such changes, and are therefore the relevant input for forward-looking TELRIC. U S WEST witness William Easton's testimony shows the extent to which U S WEST's prescribed lives in Colorado have departed from the economic lives chosen by competitors.

Q. PLEASE EXPLAIN THE ECONOMIC RATIONALE FOR USING A FORWARD LOOKING, RISK-ADJUSTED COST OF CAPITAL IN TELRIC.

A. The FCC Order concludes that a forward-looking, risk-adjusted cost of capital should be used in TELRIC studies. These capital costs should be calculated by analyzing actual conditions prevailing in debt and equity markets, and not arbitrarily determined by regulators.

> *Forward-looking cost of capital.* The forward-looking cost of capital shall be used in calculating the total element long-run incremental cost of an element.[46]

> [W]e also agree that, as a matter of theory, an increase in risk due to entry into the market for local exchange service can increase a LEC's cost of capital.[47]

Two factors make it extremely important to use risk-adjusted, market-based costs of capital. First, incumbent LECs face increased risks to their revenue streams as competition increases in the new post-Telecom Act environment. It is a basic tenet of economics that the cost of capital to a firm in a highly competitive market is greater than a similarly situated firm in a regulated franchise monopoly environment. In the old regulated franchise world, U S WEST's stock was often held by investors who depended on its consistent dividends as a source of regular income (so called "widows and orphans"). Many of these investors were in for a rude surprise when U S WEST's and other incumbent LECs' stock prices fell sharply following the FCC's 96-98 Order. This stock price fall represented a substantial increase in risk and in U S WEST's cost of

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[46] FCC Order, Appendix B, § 51.505.

[47] FCC Order, paragraph 687.

capital. A state-authorized rate of return determined prior to recent federal and state policy decisions could underestimate U S WEST's cost of capital.

Second, U S WEST is experiencing cash flow shortages. Cash flow is a crucial business concern for U S WEST and other LECs as service quality, carrier-of-last-resort and other regulatory obligations require large amounts of cash investment. If the cash demands from federally mandated investments, such as providing unbundled networks elements or complying with number portability requirements, exceed available cash flow, U S WEST would be forced to obtain more capital from the debt and equity markets, and could face significantly higher capital costs. The cost of debt and equity are influenced by, among other things, the cash to debt position of the company going to market. Both of these factors are likely to cause U S WEST's cost of capital to increase, making it extremely important to use realistic capital costs in TELRIC studies.

Q. PLEASE EXPLAIN THE RATIONALE FOR ATTRIBUTING INDIRECT EXPENSES ON A COST-CAUSAL BASIS IN TELRIC.

A. The FCC explains that all costs which are incremental to, or causally associated with, providing an element should be included in the TELRIC of that element. This is one of the basic principles underlying economic cost analysis. For example, the market value of real estate and buildings used to house end office switches should be attributed to the TELRIC of end office switching.

> Directly attributable forward-looking costs include the incremental costs of facilities and operations that are dedicated to the element... Directly attributable forward-looking costs also include the incremental costs of shared facilities and operations. Those costs shall be attributed to specific elements to the greatest extent possible... More broadly, certain shared costs that have conventionally been treated as common costs (or

overheads) shall be attributed directly to the individual elements to the greatest extent possible.[48]

A properly conducted TELRIC methodology will attribute costs to specific elements to the greatest possible extent, which will reduce the common costs. Nevertheless, there will remain some common costs that must be allocated among network elements and interconnection services.[49]

B. ADDITIONAL ECONOMIC COSTING PRINCIPLES

Q. ARE THERE ANY ADDITIONAL ECONOMIC COSTING PRINCIPLES WHICH ARE IMPORTANT FOR CONDUCTING TELRIC STUDIES?

A. Yes. In addition to the methodologies enumerated by the FCC, there are four other main principles which are consistent with and implied by the FCC Order but not explicitly presented in the Order. In order to explain these additional principles, it is necessary to understand the underlying economic rationale for using TELRIC in the pricing of network elements. TELRIC is designed to estimate the actual costs a provider would incur if it entered the local exchange market from scratch and built out a new network using a forward looking and therefore most efficient available technology. Using the estimated costs of an efficient provider as the basis for setting the prices of unbundled network elements ensures that entry will occur only when it is efficient and that U S WEST will be able to cover the full economic costs of providing network elements to entrants.

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[48] FCC Order, paragraph 682.

[49] FCC Order, paragraph 695.

Q. IN ESTIMATING THE ACTUAL FORWARD LOOKING COSTS OF PROVIDING UNBUNDLED NETWORK ELEMENTS, WHY IS IT IMPORTANT TO USE REALISTIC ASSUMPTIONS ABOUT THE AMBIENT FIELD CONDITIONS?

A. Basing TELRIC costs on actual field conditions is critically important. Any new entrant who was building a network from scratch would face a set of ambient construction and placement conditions. For example, much of the trenching for placing buried transmission cables would not be in an undeveloped environment but instead would require digging up lawns, gardens, streets and sidewalks. In the real world of actual field conditions, this type of placement in developed urban and suburban service areas would be much more common than placement in undeveloped or rural environments. Because these difficult ambient conditions dramatically increase the costs of constructing network elements, they must be taken into account when developing TELRIC studies. Failure to do so would result in large downward biases in the cost estimates: it would amount to trying to have it "both ways" using the best available technology (which correctly prevents U S WEST from recovering embedded costs for out-moded technologies), but assuming that the technology was actually installed prior to the construction of buildings, streets and sidewalks in an area.

Q. IN ESTIMATING THE ACTUAL FORWARD LOOKING COSTS OF PROVIDING UNBUNDLED NETWORK ELEMENTS, IS IT IMPORTANT TO USE REALISTIC ASSUMPTIONS ABOUT THE ENGINEERING ECONOMICS OF THE LOCAL EXCHANGE NETWORK?

A. Yes. Engineering economics (with regard to the local exchange network) combines an understanding of the technical specifications of network design, construction, maintenance and operation, with the costs incurred in building and operating the network.

For example, when developing cost estimates of the structures that carry transmission cables (e.g., trenches, conduits and poles), it is important to know how many and what size cables will be carried through a given structure and what type of terrain and geology the structure is being placed on or in. A 16" diameter telephone poll might be strong enough to hold the distribution cables on a low density suburban road but not a high density urban street. Similarly, when estimating the size and cost of conduits required to carry feeder cables it is important to know how many cable strands the conduit will carry, how thick each strand is, and the soil properties where the conduit is being constructed.

Q. IS IT IMPORTANT TO USE FORWARD LOOKING OPERATING EXPENSES IN TELRIC STUDIES?

A. Yes. Operating expenses make up a substantial proportion of the cost of providing local exchange service and unbundled network elements, so it is important to correctly calculate forward looking operating expenses as part of TELRIC. For example, even if a company still owns and operates analog switches, switch maintenance expenses should not include any allowances for the maintenance and repair of analog switches since forward looking technology would only use digital switching. Additionally, many of the expenses surrounding the maintenance of interoffice copper transmission facilities would be eliminated from forward looking operating expense estimates, because copper would not be nearly as prevalent in forward looking transmission technologies. While it is important to factor in the operating cost savings of using forward looking, best available technology, it is also important to include realistic estimates of the operating costs that will actually be incurred.

Q. IS IT IMPORTANT TO INCLUDE THE COST OF UNBUNDLING IN TELRIC?

A. Yes. Aside from the possible investment cost for additional equipment required to unbundle network elements, each unbundled product has to be separately engineered and costed before it can be sold. In addition to imposing direct costs on U S WEST, unbundling will create uncertainty which will make long-term network planning and investment decisions more costly. There are also potential network reliability effects from adding additional unbundled elements to the network. If U S WEST is required to absorb these costs which are imposed by entrants, they will either have to cut back on other investments or pass the costs through to their own end users or shareholders. In addition to being inequitable, failure to require new entrants to pay the costs of unbundling would bias new entrants' choice between building or buying network elements, because they would not have to pay all of the costs caused by their decisions. This bias in the "build or buy" decision will retard the growth of investment in facilities by entrants. These costs are not trivial and are appropriately included as part of TELRIC.

In several places the FCC Order acknowledges the existence of costs associated with implementing its Order and specifically provides that incumbent LECs be allowed to recover these costs.[50] The Colorado Commission needs to allow U S WEST and other incumbent LECs to recover these and other similar costs, which arise from unbundling, from the new entrants who cause them. Clearly, the FCC's requirement that the TELRIC studies be based on the best available forward looking technology does not mean that forward looking networks would necessarily be built to be unbundled, thereby ignoring the costs of unbundling.

[50] FCC Order Paragraphs 200, 384 and 749.